



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/938,734	08/27/2001	Hiroyuki Yokoyama	011006	2750

23850 7590 07/07/2004

ARMSTRONG, KRATZ, QUINTOS, HANSON & BROOKS, LLP  
1725 K STREET, NW  
SUITE 1000  
WASHINGTON, DC 20006

EXAMINER
----------

PAYNE, DAVID C

ART UNIT	PAPER NUMBER
----------	--------------

2633

DATE MAILED: 07/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/938,734

Applicant(s)

YOKOYAMA ET AL.

Examiner

David C. Payne

Art Unit

2633

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 August 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

Art Unit: 2633

**DETAILED ACTION*****Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

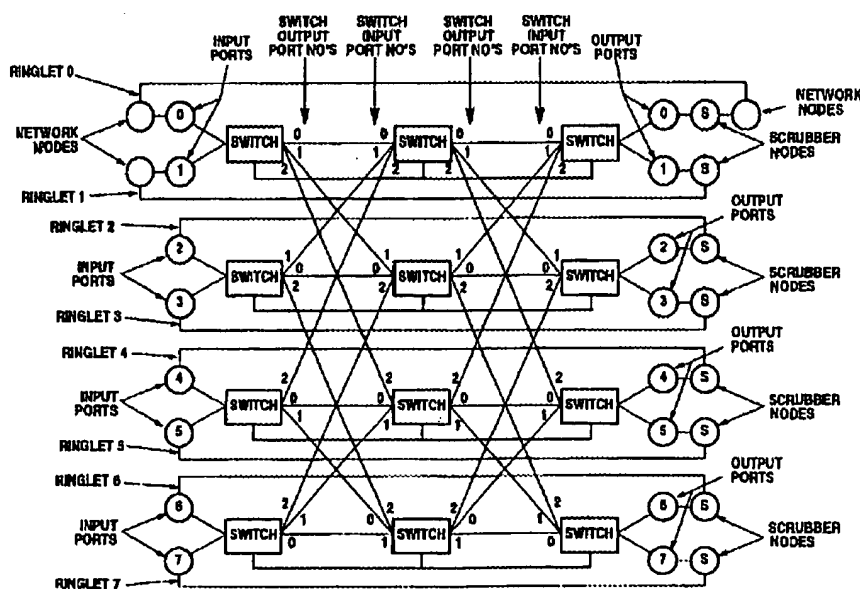
A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 5 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Bennett et al.

US 5,799,015 (Bennett).

Re claims 1, 5 and 17, Bennett disclosed,



**Figure 1**

Art Unit: 2633

A routing control method in an optical packet switching network including a plurality of optical packet switches, each optical packet switch having a plurality of output ports used for sending packets to other optical packet switches, respectively, said method comprising the steps of: in a one optical packet switch (*see Bennett Figure 1, switch in Row 1 Column 3*) monitoring congestion conditions at its output ports (*see Bennett e.g., col./line: 21/12-25*); in said one optical packet switch, transferring packets to be stored in a one output port (*port 1 of switch in Row 1 Column 3*) that is judged in said monitoring step as in congestion, to other output port that is judged in said monitoring step as not in congestion (*port 0 of switch in Row 1 Column 3*); from said one optical packet switch, sending the packets as reflection packets via said other output port to an other optical packet switch (*switch in Row 1 Column 1*) corresponding to said other output port; and from said other optical packet switch, returning said reflection packets to said one optical packet switch (*see Bennett e.g., col./line: 21/12-25*).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2-4 and 6-16 rejected under 35 U.S.C. 103(a) as being unpatentable over Bennett et al. US 5,799,015 (Bennett).

Re claims 9 and 10 Bennett disclosed,

Art Unit: 2633

A routing control method in an optical packet switching network including at least first, second and third optical packet switches, said method comprising the steps of: in said first optical packet switch (*see Bennett Figure 1, switch in Row 1 Column 3*), when a first output port (*port 1 of switch in Row 1 Column 3*) used for sending optical packets to said second optical packet switch (*switch in Row 1 Column 1*) is in congestion and a second output port (*port 0 of switch in Row 1 Column 3*) used for sending optical packets to said third optical packet switch (*switch in Row 1 Column 2*) is not in congestion, sending optical packets to be sent to said second optical packet switch to said third optical packet switch via said second output port (*port 0 of switch in Row 1 Column 3*) as reflection packets;

Bennett does not disclose,

in said third optical packet switch, returning the reflection packets received from said first optical packet switch to said first optical packet switch; and in said first optical packet switch, when said first output port is not in congestion, sending the reflection packets to said second optical packet switch via said first output port. That is Bennett, does not disclose returning packets to the same port of the first packet switch. However, it would have been obvious to one of ordinary skill in the art at the time of invention that re-circulation to the same port would reduce transit time in the network and thereby reduce the chance of out of sequence packets.

Re claims 2 and 11, Bennett does not disclose,

wherein said transferring step comprises selecting said other output port from output ports judged in said monitoring step as not in congestion so as to provide a reflection route with

Art Unit: 2633

the shortest transmission delay time. However, it would have been obvious to one of ordinary skill in the art at the time of invention that re-circulation to the same port would reduce transit time in the network and thereby reduce the chance of out of sequence packets.

Re claims 3 and 12, Bennett does not disclose, wherein said transferring step comprises selecting said other output port in random from output ports judged in said monitoring step as not in congestion so as to provide reflection routes with transmission delay times within a predetermined range. However, it would have been obvious to one of ordinary skill in the art at the time of invention to select ports at random so that a random Poisson distribution of packets would result.

Re claims 4 and 13, Bennett does not disclose, wherein said transferring step comprises sequentially selecting said other output port from output ports judged in said monitoring step as not in congestion so as to provide reflection routes with transmission delay times within a predetermined range. However, it would have been obvious to one of ordinary skill in the art at the time of invention to select ports sequentially as this is the most ordered way to traverse a list of ports in a database.

Re claims 6 and 14, Bennett does not disclose, wherein said method wherein said sending step and returning step are repeatedly performed. However, it would have been obvious to one of ordinary skill in the art at the time of invention to iteratively perform the reflection routing sequence as 1) the ports may remain in

Art Unit: 2633

congestion for a period of time and 2) subsequent packets may experience congestion or misroutes and need to be rerouted according to the algorithm.

Re claims 7 and 15, Bennett does not disclose, wherein said method further comprises a step of sending the reflection packets returned from said other optical packet switch earlier than packets stored in said one output port. However, it would have been obvious to one of ordinary skill in the art at the time of invention to return reflection packets back earlier than packets stored in the other output port since the other output port is typically experiencing congestion in the scenario of using the reflection packets. Thus naturally the reflection packet has little hold time in the reflection switch and is returned quickly for a re-insertion attempt at the congested port.

Re claims 8 and 16, Bennett does not disclose, wherein said method further comprises a step of counting the number of reflection and a step of abandoning packets when a counted number reaches a predetermined number. However, it would have been obvious to one of ordinary skill in the art at the time of invention to apply an upper bound to the number of attempts of holding (re-circulating) packets since a continuously congested port may signal a failure; furthermore, continuous re-circulation of a packet has the effect of creating congestion on the re-circulation ring.

***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Monacos US 5,617,413 disclosed deflection routing which is similar to the applicant's reflection routing.
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David C. Payne whose telephone number is (703) 306-0004. The examiner can normally be reached on M-F, 7a-4p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (703) 305-4729. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dcp

  
JASON CHAN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600